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(54) Carrier means for attachment to a vehicle

(57) A plate 10 provided with divergent sockets 13, 14 is attached to the rear of a vehicle and ends of elongate upwardly-projecting elements 11, 12 are removably inserted into these sockets 13, 14. The elements 11, 12 have lateral angled arms 17, 18 adjacent their upper ends whereon a bicycle 30 or other item may be supported.

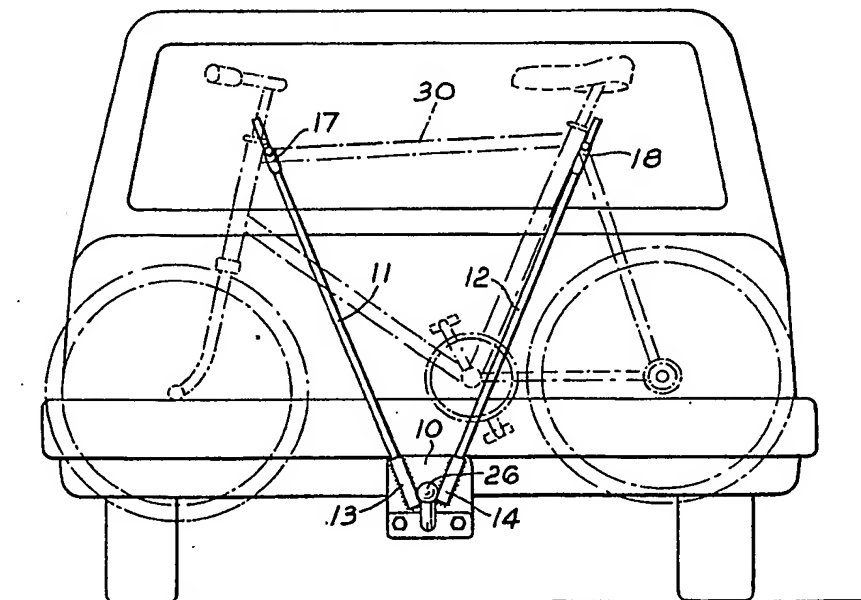


Fig. 4

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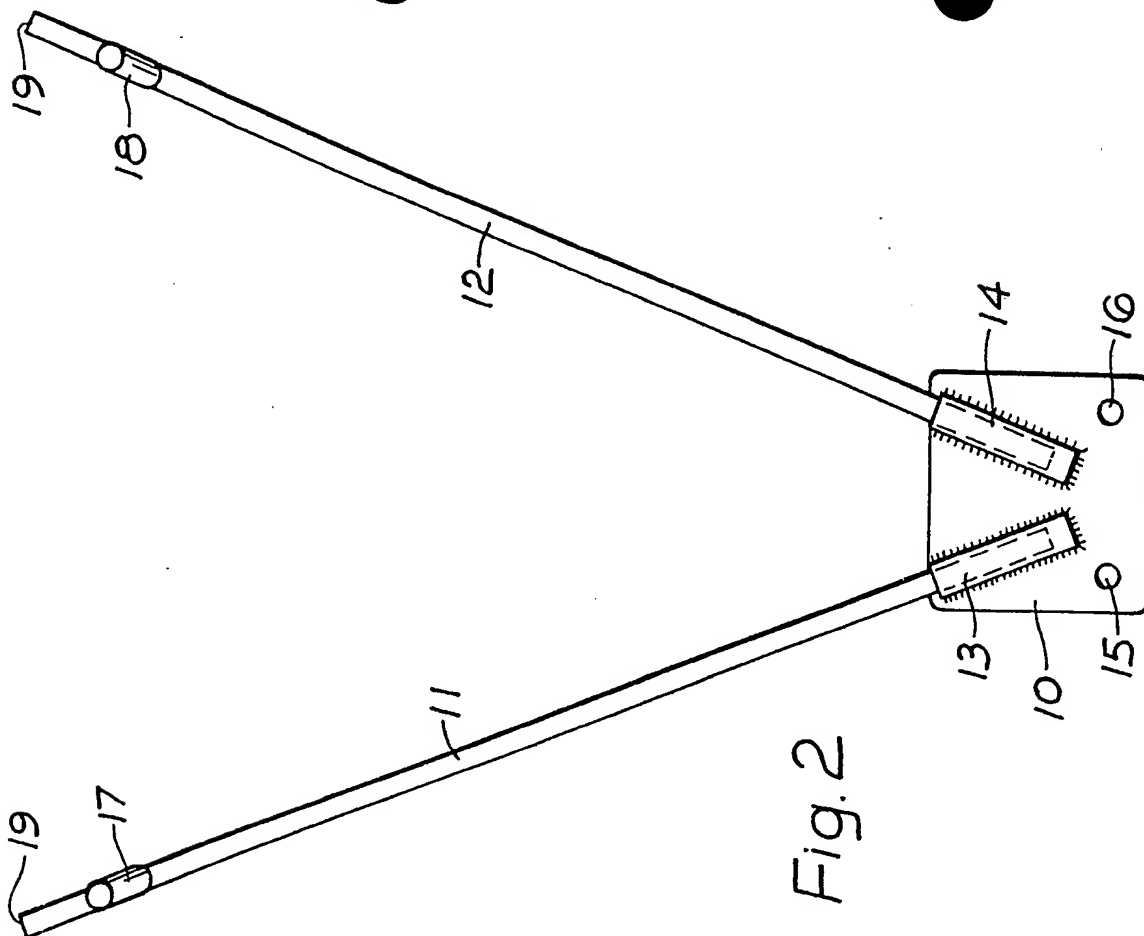


Fig. 2

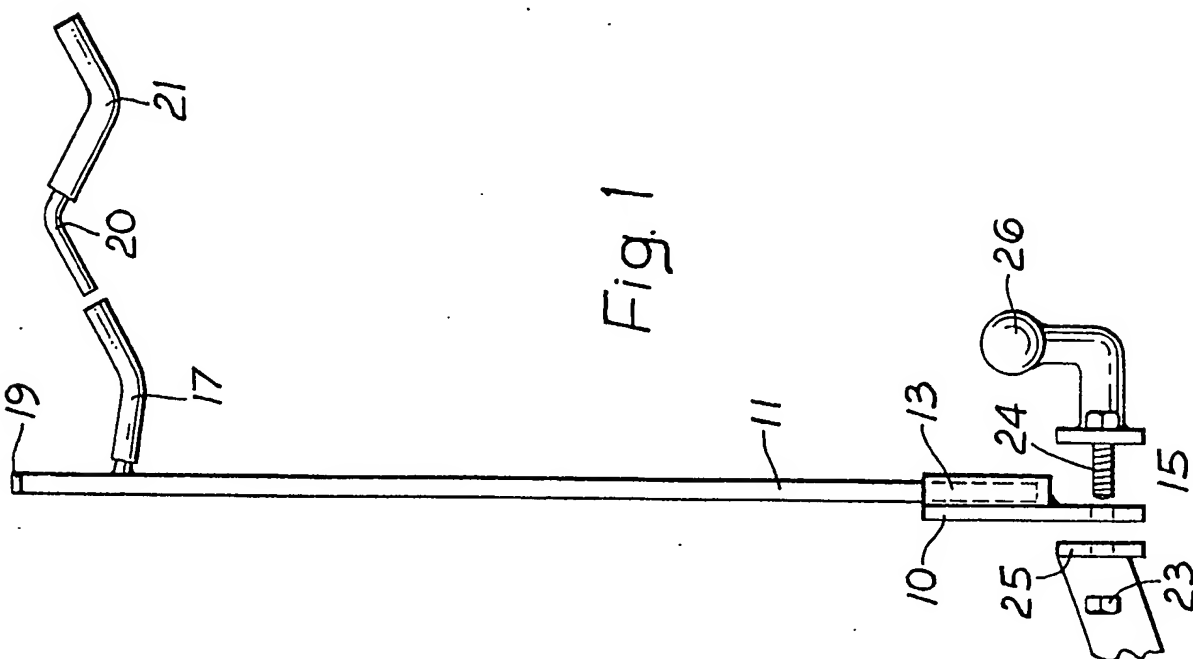


Fig. 1

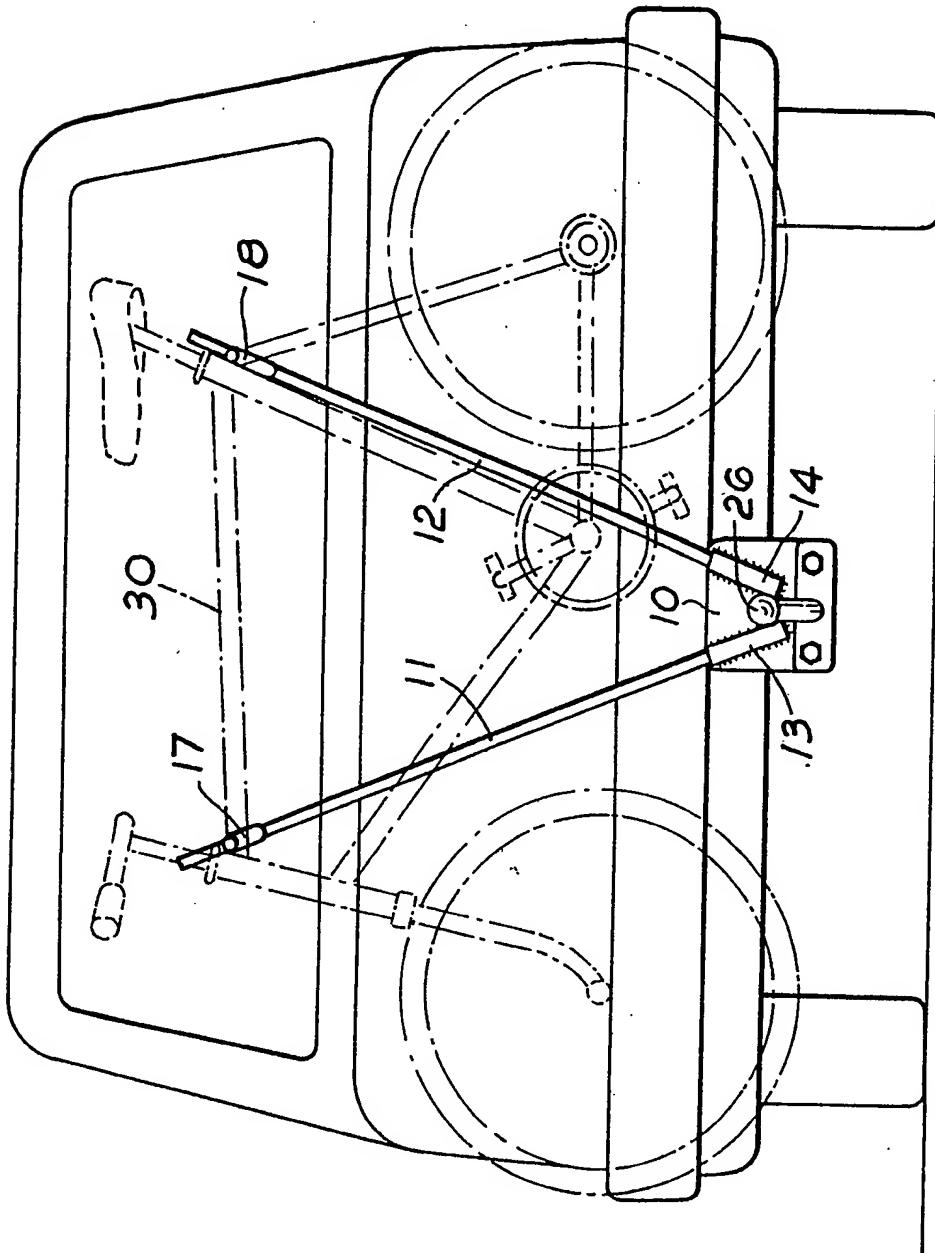


Fig. 4

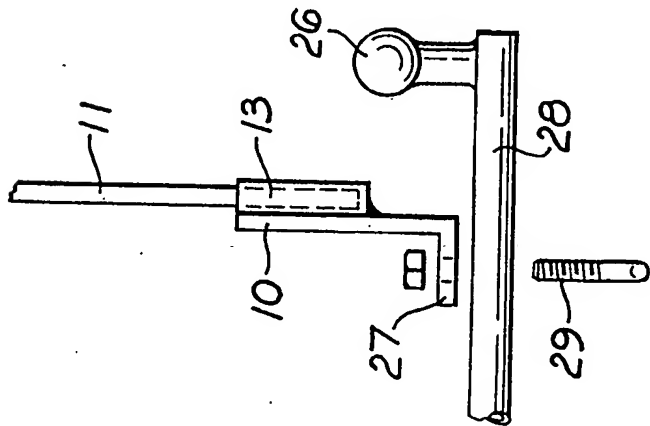


Fig. 3

exterior, as will be described shortly.

The elongate elements 11, 12 consist of tubes, also of approximately square cross-section, in the region of 90 cm long. However, the cross-sectional dimensions of these tubes 11, 12 are slightly smaller than the dimensions of the sockets 13, 14 so that one end of each of the elements 11, 12 can be inserted into a respective one of the sockets 13, 14 with little clearance therebetween as indicated in Figure 2. The inter-fitting angular cross-sections of the elements 11, 12 and the sockets 13, 14 obviously preclude substantial relative rotation therebetween. Each elongate element 11, 12 is provided with a lateral arm 17, 18 a few cm from one of its ends. This arm 17, 18 is welded to the tubular element 11, 12 and initially extends perpendicularly thereto, but about half way along its length it is bent through an angle in the region of 45°, towards the adjacent end of the element 11, 12. Each arm 17, 18 is also tubular in form and is for the most part covered by a protective plastics sleeve, as clearly shown in Figure 1. The ends of the elongate elements 11, 12 adjacent the respective arms 17, 18 are closed by plugs 19.

The carrier means also includes two extension members 20 which are each bent into the shape of an open S, with each end region bent in opposite directions relative to a central region. The free end of each arm 17 or 18 provides a socket into which one end region of a respective extension member 20 is locatable, as indicated in Figure 1. Each arm 17, 18 with its respective extension member 20 attached thus has a substantially horizontal region followed by an upwardly inclined region, followed by a further horizontal region and a further upwardly inclined region. The S-shaped extension members 20 are also covered by protective sleeves 21 over most of their length, excepting the end which is inserted into the respective arm 17 or 18. In use, a respective cycle may be supported on each of the generally horizontal regions of the arms and the extension members, as will be described shortly.

The above-described cycle carrier is specifically designed for use with a car fitted at its rear with a conventional towing hitch bracket. By way of the holes 15, 16, the plate 10 is secured in place between the bracket 25 and the towing hitch ball 26 by means of nuts and bolts 23, 24, as shown in Figure 1, and in Figure 4. The sockets 13, 14 are thus located towards the upper edge of the plate 10, with their lower ends, near the centre of the plate, close together and blocked off and their upper ends, which are spaced further apart near the upper corners of the plate 10, open. The ends of the elongate elements 11, 12 remote from the arms 17, 18 are inserted into the upper ends of the sockets 13, 14, as indicated in Figures 2 and 4 so that the elements 11, 12 themselves diverge upwardly and give rise to an approximate V-shape. The elements 11, 12 are located in the sockets 13, 14 at an appropriate orientation so that the respective arms 17, 18 project outwardly of the rear of the vehicle and approximately parallel to each other. A cycle 30 can then be placed onto the arms 17, 18, with the arms 17, 18 extending, for example, beneath the cycle cross bar and between the seat support struts, as shown in Figure 4. The cycle is actually supported

on the generally horizontal portion of the arms 17, 18 immediately adjacent the upright parts of the respective elements 11, 12 whilst the upwardly inclined free end regions of the arms 17, 18 serve to retain the cycle on the carrier as the vehicle moves. However, for additional security the cycle is preferably also attached to the carrier by straps. The sleeves covering the arms 17, 18, of course, prevent damage to the cycle.

The divergence of the sockets 13, 14 and thus of the elongate elements 11, 12 located therein means that the cycle is supported at spaced apart positions and is thus reasonably well balanced. Moreover, in view of the weight of the cycle supported thereon the elements 11, 12 in this arrangement cannot be dislodged by purely vertical or purely horizontal forces as might arise upon movement of the vehicle.

If two cycles are to be supported the S-shaped extension members 20 are connected to each of the arms 17, 18 and the second cycle is simply mounted thereon in a similar manner to the first cycle on the arms 17, 18 so that the two cycles lie side-by-side.

Access to the boot of the car is still possible when the carrier is fitted in position, even when two cycles are supported thereon. Also access to the towing ball is not impeded in any way so the car can still be used for towing whilst one or two cycles are carried across of the rear of the car on the carrier means.

When the carrier is not in use the elongate elements 11, 12 can be removed from the sockets 13, 14 and, if in place, the extension members 20 disconnected from the arms 17, 18 and all these parts can be easily stowed in the car boot. The plate 10 can, however, be left in place. It does not spoil the appearance of the car and may, in fact, prove useful in protecting the rear of the car against damage due to contact with the end of a towing bar which may occur when the car is backed towards a trailer or caravan.

Figure 3 shows a slightly modified embodiment of the carrier in which the plate 10 is formed with a lower flange 27 for attachment, e.g. by means of a U-shaped bolt 29, to a horizontal bar 28 on which the towing hitch ball 26 is mounted, the latter arrangement being found on some continental makes of car.

The main components of the carrier means, namely the plate 10, the elements 11, 12 and the extension members 20 will probably be made of aluminium, but other metals, or indeed other suitable materials are possible.

It must be understood that the above-described embodiment is merely illustrative and not limitative of the invention and variations are possible within the scope of the following claims.

The carrier means proposed herein is especially advantageous because it can be used for bicycles of all makes and all sizes without any modification being required, the arm being simply located beneath any convenient parts of the cycle frame or wheels. However, it should be understood that other items such as golf trolleys, pram chassis and even spare wheels may be mounted on the carrier means, which is not specifically designed to suit bicycles, but is especially useful therefor.

## CLAIMS

1. Carrier means for attachment to a vehicle rear or side comprising a plate which is adapted for  
5 attachment to the vehicle and is provided with a pair of sockets diverging at an acute angle, each socket being shaped to receive one end of a respective elongate element, which is provided towards its other end with an angled lateral arm.
- 10 2. Carrier means as claimed in claim 1 wherein the sockets and the elongate elements are polygonal in cross-section to prevent substantial rotation of each element when inserted into its respective socket.
- 15 3. Carrier means as claimed in claim 1 or 2 wherein the elongate elements are hollow.
4. Carrier means as claimed in claim 2 and 3 wherein the elongate elements consist of tubes of rectangular cross-section.
- 20 5. Carrier means as claimed in any preceding claim wherein a protective sleeve is located around the free end region of each arm.
6. Carrier means as claimed in any preceding claim wherein a pair of S-shaped extension members  
25 are provided for attachment to the free ends of each arm.
7. Carrier means as claimed in claim 6 wherein the free end of each arm is formed as a socket and shaped to receive one end of a respective S-shaped  
30 extension member.
8. Carrier means as claimed in any preceding claim wherein the plate is substantially flat and is provided with holes so that it can be bolted directly onto a towing hitch bracket.
- 35 9. A vehicle having a towing hitch bracket secured to its rear and carrier means as claimed in any preceding claim attached thereto, the plate of the carrier means being bolted onto the bracket with the elongate elements projecting upwards and inclining  
40 away from each other.
10. Carrier means substantially as hereinbefore described with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.
11. A vehicle substantially as hereinbefore described with reference to and as illustrated by Figure 4  
45 of the accompanying drawings.